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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,617	12/17/2003	Kristy A. Campbell	M4065.0698/P698-A	4072

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EXAMINER	
ROCCHEGIANI, RENZO	
ART UNIT	**PAPER NUMBER**
2825	

DATE MAILED: 11/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/736,617	CAMPBELL ET AL.	
	Examiner	Art Unit	
	Renzo N. Rocchegiani	2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 September 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *31-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *31-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *09/27/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed September 27, 2004 fails to comply with 37 CFR 1.98(a)(3) because it does not include a copy, translation or concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the foreign referenced listed therein have been crossed out and not considered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claims 31-34, 37 and 39 are rejected under 35 U.S.C. 102(a) as being anticipated by US Reissued Patent No. 37,259 E (Ovshinsky).

Ovshinsky discloses a memory device comprising a substrate (item 10) a first electrode (items 42+40) a resistance varable chalcogenide material (item 36) of at least 200 Angstroms in thickness (col. 16, lines 45-50) operatively adjacent to first electrode and a second electrode (item 14) that is operatively adjacent to the chalcogenide material. Ovshinsky further discloses that the chalcogenide material comprises Ge and Se as well as a metal ion dopant (col. 11, lines 35-67 & col. 12, lines 1-20). Finally

Ovshinsky discloses that the chalcogenide material may comprise a gradient structure with alternating layers having different Ge contents such as Ge22Sb22Te56 and Ge14Sb29Te57. (col. 13, lines 1-20).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 34, 36, 38 and 40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Reissued Patent No. 37,259 E (Ovshinsky).

As stated in paragraph 3, all the limitations of these claims have been met except for teaching that the thickness of the different regions is between 10 and 100 Angstroms and that the ion impurity content is homogeneous throughout.

Ovshinsky discloses that the chalcogenide material is deposited to a thickness as small as 200 Angstroms. (col. 16, lines 45-50).

It would have been obvious to one with ordinary skill in the specific art to form the regions of thicknesses between 10 and 100 Angstroms, since Ovshinsky discloses 200 Angstroms to be the total thickness of the chalcogen material and Ovshinsky also discloses the use of alternating layer to form a gradient structure thus each layer of the gradient structure would be less than 200 Angstroms and it has been held to be within the general skill of a worker in the art to discover optimum or workable ranges. *In re Aller*, 105 USPQ 233. Furthermore, such a modification would require a mere change

in size and it has also been held that a change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237.

Furthermore, while Ovshinsky does not specify that the ion doping is homogeneous through the chalcogenide, one with ordinary skill in the specific art would make the ion doping homogeneous, since it has been held that the provision of adjustability, where needed, involves only routine skill in the art. *In re Stevens*, 101 USPQ 284.

6. Claims 35 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Reissued Patent No. 37,259 E (Ovshinsky) in view of US Patent No. 5,761,115 (Kozicki et al.).

As stated in paragraph 3, all the limitations of the claims have been met except for teaching that the second electrode and that the ion impurity comprise silver.

Koziki et al. teach a memory device comprising a chalcogenide with ion impurity such as silver and wherein the anode is formed to comprise silver. (col. 3, lines 25-35 and col. 5, lines 20-31).

It would have been obvious to one with ordinary skill in the specific art to combine the teachings of Koziki et al. to those of Ovshinsky, since Ovshinsky teaches that the ion impurity is of a transitional metal and since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 31-42 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 79- 96 of copending Application No. 10/225,190. Although the conflicting claims are not identical, they are not patentably distinct from each other because while the copending application does not specify the thickness of the regions such difference involves a mere size change and thus would be obvious to one with ordinary skill in the specific art.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

9. Claims 31-42 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-25 of copending Application No. 10/230,327. Although the conflicting claims are not identical, they are not patentably distinct from each other because while the copending application forms multiple layers of chalcogenide material with different concentration as opposed to one layer with a gradient concentration, it has been held that forming in one piece an article which has formerly been formed in two or more pieces involves only routine skill in the art.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

10. Applicant's arguments filed on September 7, 2004 have been fully considered but they are not persuasive. Applicant has amended to the claims to correct the minor informalities thus the claim objections have been overcome. Applicant has also filed one terminal disclaimer thus the provisional double patenting with respect to application serial number 10/230,201 has been withdrawn. Applicant has refused to address the provisional double patenting with respect to application serial number 10/225,190 thus it still stands. Applicant has ignored the provisional double patenting rejection over application serial number 10/230,327 which the records show has been allowed just not published yet. To prevent a non-responsive action in the future applicant is advised to address this rejection as well. With respect to the rejection over prior art applicant's argument are not deemed to be persuasive thus the examiner has decided to maintain

the rejection. Applicant presents three main arguments as to why the prior art does not anticipate nor render the present invention obvious. First the applicant argues that the Ovshinsky reference does not teach "the second electrode and resistance variable chalcogenide comprising material operatively connecting at an interface, the chalcogenide comprising material having a first region which is displaced form the interface at least by a chalcogenide material interface region having a higher content of "A" than the first region". The examiner disagrees. Ovshinsky teaches that layer 36 may be formed of multiple layer with different concentrations of "A" in them wherein the layers would be alternating. Furthermore the claim language is not limited to only one layer being in between the chalcogenide comprising material and the interface thus additional layers would still read on the claim. Thus, Ovshinsky meets this limitation. Second, the applicant argues that the prior art does not teach the interface region to be homogeneous. The examiner points out that the rejection states that this limitation is rendered obvious by the reference even though the reference does not explicitly disclose it. Thus, the examiner agrees with applicant that the limitation is not explicit in the prior art of record. Yet, applicant has failed to rebut to the obviousness rejection which has been presented. Thus, the rejection stands. Third, the applicant argues that the Kozicki reference only teaches group I and group II metal and that it would not be obvious to substitute Ag for a transition metal. The examiner disagrees with this point as well. First, the examiner points out that silver, Ag, is a transition metal. Second, the examiner points out that Kozicki does teach the use of silver. Thus, the rejection does not replace a transition metal with a group I or II metal, but merely states that silver is

the one transition metal to be used. Thus, this would be obvious because one with skill in the art would recognize that silver is a transition metal as required by the main reference and would have an expectation of success in using it. For the foregoing reasons the examiner has not been persuaded and has maintained the rejection. This action is final.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Renzo N. Rocchegiani whose telephone number is (571)272-1904. The examiner can normally be reached on Mon.-Fri. 8:00 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (571)272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Renzo N. Rocchegiani
Examiner
Art Unit 2825

MATTHEW SMITH
SUPERVISORY PATENT EXAMINER
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